

CLAIMS

1. A subsea system for separating a multiphase fluid emanating from one or more subsea wells, comprising a foundation structure (1) secured to the seabed, **characterized in** that the subsea system further comprises:
 - 5 - a header piping module (2) adapted to be mounted to the foundation structure (1), said header piping module (2) comprising at least one inlet (20) for receiving fluid to be processed by the subsea system,
 - 10 - a separator piping module (3) adapted to be removably mounted to the header piping module (2), said separator piping module (3) comprising a piping system for interconnecting different processing appliances (4-8) of the system, the piping system being arranged to be in fluid communication with the inlet (20) of the header piping module (2) when the separator piping module (3) is mounted to the header piping module (2), and
 - 15 - one or several insert modules (4-8), each of which comprising a processing appliance of the subsea system and being adapted to be removably mounted to the separator piping module (3).
2. A subsea system according to claim 1, **characterized in** that the separator piping module (3) is adapted to be mounted to the header piping module (2) by being lowered down substantially vertically into engagement with the header piping module (2) and demounted from the header piping module (2) by being lifted substantially vertically out of engagement therewith.
3. A subsea system according to claim 2, **characterized in** that the foundation structure (1) or the header piping module (2) is provided with a guiding member (21a) adapted to engage with a corresponding guiding member (21b) of the separator piping module (3) when the separator piping module (3) is lowered down into engagement with the header piping module (2), the guiding member (21b) of the separator piping module (3) hav-

ing its centre axis coinciding with the centre-of-gravity axis of the separator piping module.

4. A subsea system according to any of the preceding claims,
5 **characterized in** that the header piping module (2) supports the separator piping module (3) when the separator piping module (3) is mounted thereto.
5. A subsea system according to any of the preceding claims,
10 **characterized in** that the respective insert module (4-8) is adapted to be mounted to the separator piping module (3) by being lowered down substantially vertically into engagement with a receiver arranged in the separator piping module (3) and demounted from the separator piping module (3) by being
15 lifted substantially vertically out of engagement therewith.
6. A subsea system according to claim 5, **characterized in** that the insert module (4-8) is adapted to be received in a receiver cavity (30) in the separator piping module (3), the insert module (4-8) being insertable substantially vertically through an upper opening of the receiver cavity.
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7. A subsea system according to claim 6, **characterized in** that, the insert module (4-8) is rotational symmetric, the receiver cavity (30) having a corresponding shape.
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8. A subsea system according to claim 6 or 7, **characterized in** that the insert module (4-8) is provided with a flange (31), which is adapted to bear on a corresponding flange (32) at the upper part of the receiver (40) when the insert module (4-8) is mounted therein, a watertight seal (33), preferably in the form of a metal seal, being arranged between said flanges (31, 32) so as to seal the space between the receiver (40) and the part
30 of the insert module (4-8) received therein from the surrounding sea water.
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9. A subsea system according to any of the preceding claims, **characterized in** that at least one insert module (5, 7, 8) comprises a cyclonic separator.
- 5 10. A subsea system according to claim 9, **characterized in** that at least one insert module (5) comprises a cyclonic separator operable for removing a gas phase from the multiphase fluid.
- 10 11. A subsea system according to claim 9 or 10, **characterized in** that at least one insert module (7) comprises a cyclonic separator operable for removing solids from the multiphase fluid.
- 15 12. A subsea system according to any of claims 9-11, **characterized in** that at least one insert module (8) comprises a cyclonic de-oiling separator.
13. A subsea system according to any of the preceding claims, **characterized in** that at least one insert module (6) comprises a water pump.
- 20 14. A subsea system according to any of the preceding claims, **characterized in** that at least one insert module (4) comprises a ball valve.
- 25 15. A subsea system according to any of the preceding claims, **characterized in** that the header piping module (2) is adapted to be removably mounted to the foundation structure (1).
- 30 16. A subsea system according to claim 15, **characterized in** that the header piping module (2) is adapted to be remotely mounted to the foundation structure (1) by being lowered down substantially vertically into engagement with the foundation structure (1) and demounted from the foundation structure (1) by being lifted substantially vertically out of engagement therewith.
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17. A subsea system according to claim 16, **characterized in** that the foundation structure (1) is provided with a guiding member (21a) adapted to engage with a corresponding guiding member (21b) of the header piping module (2) when the header piping module (2) is lowered down into engagement with the foundation structure (1), the guiding member of the header piping module (2) having its centre axis coinciding with the centre-of-gravity axis of the header piping module.
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- 10 18. A subsea system according to any of the preceding claims, **characterized in** that the separator piping module (3) is provided with a separator vessel (12) for gravitational separation or intermediate settlement of the multiphase fluid.
- 15 19. A subsea system according to any of the preceding claims, **characterized in** that the header piping module (2) is provided with at least one outlet (22) for fluid processed by the subsea system, the piping system of the separator piping module (3) being arranged to be in fluid communication (26a, 26b) with the outlet (22) of the header piping module (2) when the separator piping module (3) is mounted to the header piping module (2).
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- 25 20. A subsea system according to claim 19, **characterized in** that the outlet (22) of the header piping module (2) is adapted to receive a connecting member (24) being part of an external fluid conduit, said connecting member (24) being lowered down substantially vertically into engagement with the outlet (22).
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21. A subsea system according to any of the preceding claims, **characterized in** that the inlet (20) of the header piping module (2) is adapted to receive a connecting member (23) being part of an external fluid conduit, said connecting member (23) by being lowered down substantially vertically into engagement with the inlet (20).
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